Gaslight

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'Gaslight' is, in the twenty-first century, mainly used as a verb to describe someone trying to dement their partner into insanity. That usage comes from Patrick Hamilton's 1938 neo-Victorian drama of the same title, which shows gaslight as a dirty, disreputable technology that firmly belongs in the past. By the 1930s the heyday of gaslight was over due to the electric lamp, although remnants lived on in households and streets until the second half of the C.20. However, at the start of the nineteenth century gas was readily adopted. As David Nye says: 'Gas was not only a new fuel. It replaced sporadic and decentralizes lighting with a centralized uniform system.'[1] By the 1820s there was gas lighting in every major British city. This new light-source was created using coal at gas plants located in working class areas. However, this process produced pollution that adversely affected people living near the factories, rather than the wealthier consumers of gas lighting. When the working classes gained access to an education at Mechanics Institutes one of the questions that they sought to address was how to deal with pollution from these plants. This paper examines politics and pollution surrounding gaslight, through the Minute Books of the Glasgow Mechanics' Institute (1823) and the *Glasgow Mechanics' Magazine* (1824).

The historiography of Mechanics' Institutes usually begins with George Birkbeck's Saturday evening lectures to workers at Anderson's Institution in Glasgow in 1800. This Mechanics' Class, which ran for another twenty years under the care of Andrew Ure, then enabled a new class, the first Mechanics' Institute to be initiated by members of the working classes, to emerge in 1823. For G.D.H. Cole the 1820s 'was the seeding time of all great working-class movements', although few Mechanics' Institutes were run by their own members as at Glasgow.[2] New Institutes were founded around Britain and as Mabel Tylecote writes, the 'English movement clearly owed its initiation to the Scottish example and even to the efforts locally of men of Scottish birth or training.'[3] By 1850, there were around 120 000 individuals in over 700 institutes, in the UK alone, and the Glasgow institute model was soon adopted around the world.[4]

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[1] David. E. Nye, *American Illuminations; Urban Lighting, 1800-1920* (Cambridge Mass.: MIT, 2018), p. 3.
[2] G.D.H. Cole, *Robert Owen* (London: Ernest Benn, 1925), p. 176.
[3] Mabel Tylecote, *The Mechanics' Institutes of Lancashire and Yorkshire Before 1851* (Manchester: Manchester University Press), p. 18.
[4] J. W. Hudson, *The History of Adult Education in which is comprised A Full and Complete History of the Mechanics' Institutions, Athenaeums, Philosophical, Mental and Christian Improvement Societies, Literary Unions, Schools of Design etc. of Great Britain, Ireland, America, etc., etc.* (London: Longman, Brown, Green, 1851), p. vi.

On starting at Anderson's Birkbeck found himself scouring the workshops of Glasgow for suppliers of the apparatus he needed for his teaching. From these journeys he observed: 'I had frequent opportunities of observing the intelligent curiosity of the "unwashed artificers", to whose mechanical skill I was often obliged to have recourse'.[5] Birkbeck realised that for these workers 'the avenues to science [were] barred against them because they are poor'.[6] Birkbeck's sympathy became a driver for his free lectures to workers. Birkbeck's first Saturday night lecture in the autumn of 1800 was to 75 men, the second to 200 and the third to 300. When attendance reached 500 at the fourth, people had to be turned away.[7] Birkbeck was proud of his successes, writing in a letter that detractors 'can never rob me of the gratification, which to the last hour of my conscious existence, I shall derive from the part which I have taken in the education of the working classes.'[8]

After he left in 1804 Birkbeck's successor, Andrew Ure, continued the Saturday night lectures and in 1805 he fitted gas lighting to the lecture theatre, which was said to be the first time this lighting had been seen in Glasgow. The Gaslight Chartered Company of Glasgow subsequently gave free gaslight two nights a week to the mechanics' class and library at Anderson's, in recognition of Ure's ground-breaking innovation[9]. The manager of the gas works, James Beaumont Neilson had studied at Anderson's and like Leonard Horner at Edinburgh School of Arts, was inspired by the Mechanics' Class there. In 1821 he opened a room with a small library that his workers could meet in, and which the gas company which gave five guineas towards.[10] Around fourteen men joined to begin with. In the introductory address of 'The Glasgow Gas Workman's Institution', published in the threepenny *Glasgow Mechanics' Magazine*, radical politics can be seen at work as the workmen attack British class structures:

> No nation can be called rich, merely because a few ancient families have annexed immense treasures to their overgrown estates; nor can a country be famed for its knowledge, which has merely a few richly endowed seminaries. This, however, is a maxim that has been tardily acknowledged. That proud aristocratic feeling, which would elevate the few by the oppression of many, has strained every nerve to keep things as they were.[11]

In a manifesto for the London Mechanics' Institute, published in the 3d. *Mechanics' Magazine*, Thomas Hodgskin sounds like the Glasgow gas workers when he writes that 'the upper classes, can know little or nothing of what the lower classes need, nor what is fitting for them. They know, indeed, too well what is proper for them as subjects, as tax-paying machines, as slaves, but not what is suitable to them as labourers and men.'[12] Political discussion among the working classes had been curbed by the Six Acts at the end of 1819, which amongst other things meant that 'pamphlets and papers containing any public news, intelligence, or occurrences, or any remarks or observations thereon, or upon any matter in church or state' could now not be sold 'for a less sum than sixpence'.[13] The circulation of popular papers such as William Cobbett's *Political Register* and Thomas Wooler's *Black Dwarf* sank as their price rose from

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[5] *Mechanics' Magazine, Museum, Register, Journal and Gazette*, (no. 12)15 November 1823, p. 17.
[6] *Mechanics' Magazine*, p. 17.
[7] *The Glasgow Free Press* 15 October 1823.
[8] Cited in Kelly, p. 32.
[9] Mabel Tylecote, *The early History of Mechanics' Institutes,* p. 13.
[10] Tylecote, p. 13.
[11] *Glasgow Mechanics' Magazine*, 4.97 (29 October 1825), p. 171.
[12] *Mechanics' Magazine*, 1.7 (11 October 1823), p. 100.
[13] T. C. Hansard, *The Parliamentary Debates from the Year 1803 to the Present Time, Vol. XLI. Comprising the Period from the Twenty-Third Day of November 1819 to the Twenty-Eighth Day of February 1820* (London: Hansard, 1820), p. 575.

twopence to sixpence. The aim of the act was quite simply to take such papers beyond the means of the masses.[14] My argument is that the new Mechanics' Institutes and Magazines, which cost half this amount, then became places for working-class politics.

It may have appeared to Ure, and the governors of Anderson's, as ingratitude when on 10 May 1823 the Mechanics' Class carried a resolution to split. They did not want to cut off their noses though as the minutes of 10 July show that the newly divided class still wanted access to a library that Ure had lobbied hard for. The break had been coming for some time, and, after teaching the class for almost twenty years, Ure played a significant part in it coming. The year before the rupture some of Ure's pupils wrote to him scornfully about the quality and content of his teaching:

> 'We have been prompted to write this letter to you, not by a desire to know, whether tea, sugar, or milk, should be first put in our cups; what is the cause of our breath appearing, in a foggy wintry season [..] nor indeed, to ask so puerile and contemptible questions, at a period of knowledge and refinement, equall to the present; but by a wish to remind you, in a humble and polite manner, of a promise which you gave in the last session, of giving us a few words concerning Lithography.'[15]

After the split, as Thomas Kelly notes, the new Glasgow Mechanics' Institute differed 'from Edinburgh in being thoroughly democratic in its organisation. The management of affairs was entirely in the hands of the mechanics, who at once proceeded to lease a hall, appoint a paid lecturer in chemistry and mechanics, and assemble a library and museum of apparatus.'[16] Twin mechanics classes then existed with the one Birkbeck set up in 1800 continuing with Ure in parallel with the new Glasgow Mechanics' Institute. A split occurred at Manchester for similar reasons. The Manchester Mechanics' Institute started with a library at King St. in Manchester and from 1825 a lecture series started with Andrew Wilson from Edinburgh School of Art lecturing on Mechanics and Richard Philips on Chemistry. However, this institution, like Anderson's, broke over the curriculum and running of the place. A 'New Mechanics' Institute' was formed in 1829 led by Rowland Detroisier and this ran until 1835. Keeping people in their place and addressing the division of labour seem to have been issues that led to the breakup. These splits at Glasgow and Manchester attest to tensions between paternalist governors at institutes and their members who wanted something more than an education that would improve them as workers. J. W. Hudson writes that the 'universal complaint that Mechanics' Institutions are attended by persons of a higher rank than those for whom they were designed, applies.'[17] This is something that Byron warned of when he pledged £50 to the London Mechanics' Institute, stating that 'unless all the offices in such an institution are filled with real practical mechanics, the working classes will soon find themselves deceived […] they will only become the tools of others'.[18]

Mabel Tylecote writes that the new Mechanics' Institutes 'were faced with persistent opposition from the Tory party and the Church of England'.[19] But it went beyond the C. of E. In Aberdeen, the Reverend Dr Forbes told the members of that city's institute that 'Belles lettres,

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[14] G. D. H. Cole, *The Life of William Cobbett* (London: Collins, 1924), p. 240.

[15] Cited by W. V. Farrar, 'Andrew Ure, F.R.S. and the philosophy of manufacturers," *Notes & Records, Royal Society of London,* 27 (1973), 299-324, p. 310.

[16] Thomas Kelly, 'The Origin of Mechanics' Institutes', *British Journal of Educational Studies* Vol. 1, No. 1 (Nov. 1952), pp. 17-27, 25.

[17] Hudson, p. vii.

[18] William Parry, *The Last Days of Lord Byron* (London: Knight and Lacey, 1825), pp. 204-5.

[19] Tylecote, p. 63.

Political Economy, and even History, were dangerous studies'.[20] The *Mechanics' Magazine* of 19 November 1825 cites Dr Magee, the Archbishop of Dublin, as saying that 'over-educating […] will make the people uneasy and unmanageable'.[21] E. P. Thompson cites a Yorkshire clergyman, who predicted in 1826 that Mechanics' Institutes would 'in time degenerate into Jacobin clubs and become nurseries of disaffection'.[22]

During the radical post-war years there were informers among the clergy, including the Roman Catholic priest, later Bishop, for Glasgow, Andrew Scott. In this informer's letter to the Home office as you can see how, by 1820, gas had in a few short years become a centralized technology. Scott describes a plot he had heard about in the wake of the Cato Street conspiracy and shares it with the Home Office:

> 'Glasgow is lighted with gas. The leading pipes from the Gasometers are to be cut, all at one time, that the town may be thrown into darkness'. Thereafter, ropes are 'to be placed across the narrow streets, a riot to be raised … and when the military are called out to quell it, to draw up suddenly these ropes to a certain height to make the soldiers and cavalry stumble'.

Scott details how the rebellion will proceed and warns that 'Some hundreds of the malcontents are already in possession of pistols, a number of pikes … I have my information from those who saw the pistols and who saw the pike-heads. The pike-heads were made in the Caltown of Glasgow by a Smith'. Scott goes on to say that he contacts Sidmouth directly rather than the local authorities as he fears exposure: 'to drag me before an open court of justice would ruin my character, prevent me from ever receiving any information and expose me to be murdered'.[23]

Questions set by the new Glasgow Mechanics' Institute between 1823 and 1835 mix practical and written assessments and speak to the desires and conditions people working and living in industrial areas faced. There were questions on whether `Mechanics or Chemistry had contributed much to the Arts and to the comfort of civilised life'. A Gold Medal was awarded for the best essay on the question of 'whether it would be more advantageous to Society, if less of the time of the generality of young men were devoted to the study of Dead Languages, and more to the study of the laws of nature as developed in the Sciences of Natural Philosophy and Chemistry'. They also set practical exercises to make aspirational household items more accessible:

> Prize of £5:5s., for the best and cheapest Clock, of British manufacture, in imitation of German Clocks, so much used in this country, £3:3s. for the best, and £2.2s. for the second. The object in offering this premium is to encourage the manufacture of an article for which we are largely indebted to other countries. The competition will not be confined to students of this Institution.[24]

These 'German Clocks' are frequently referred to in literature concerned with working- and middle-class life in the nineteenth century as 'Dutch' clocks but they were really Deutsch ones. Another question is on economy and air pollution:

> A GOLD MEDAL, value £5: 5s., for the best Essay on the Manufacture of Gas for Lighting towns and factories, as regards economy, quality, and the means of protecting

[20] Hudson, p. 59.
[21] *Mechanics' Magazine,* 19 November 1825, p. 76.
[22] E.P. Thompson, *The Making of the English Working Class* (Harmondsworth: Penguin, 1980), p. 809.
[23] Letter from Reverend Andrew Scott to Lord Sidmouth TNA, HO 102.30 f. 649-652.
[24] *Glasgow Mechanics Institution Minute Book* 1823-34, np.

> from offensive effluvia those who live in the neighbourhood of the works where the Gas is made.[25]

This question, about lighting, economy and quality finishes with an environmental problem that shows concern for the community who live near gasworks. Coal gas was first manufactured in Britain in 1792 by Ayrshire engineer William Murdoch, who then went on to light the Soho factory of Bolton and Watt in 1802. The process produced much pollution. Once coal tar and ammoniacal liquor was removed the coal, gas was purified from hydrogen sulphide and hydrogen cyanide by passing it over beds of slaked Lime. The resulting waste material, 'gas lime' or 'Blue billy', was often used as a building filler. In damp weather the mix gave off toxic sulphur and cyanogen.[26] The by-product of producing coal gas was coke, which was used in iron smelting. Questions about things that affected working-class people were a new thing in an educational institution and they jar with the actions of a government that was trying to restrict the knowledge economy. At Sheffield Mechanics' Institute members highlighted the dust pollution suffered by grinders, but that is outside the scope of this talk. What is notable about early nineteenth century attempts to address air pollution is that they came from working-class educational institutions that emerged despite much government and church opposition. The Glasgow Mechanics' Institute, run by its members, addressed the desires and concerns of communities living within areas where factories produced things that benefitted the wealthy at the expense of the health of the poor.

In this paper I've used gaslight to frame a talk about working class political agency at an early mechanics' institute. After outlining how liberal paternalism could cause splits in mechanics' classes, I touched on opposition from bodies who were interested in maintaining a class-system that must rely on liberal benevolence towards unenfranchised people. I then focussed on how political marginalization led to working-class political issues finding an outlet in Mechanics' Institutes and accompanying magazines. I ended using gaslight to illustrate how communities who were living with the effects of industrial pollution tried to find answers and ingenuity amongst their own mechanics' class students.

Biographical Details

Professor John Gardner is Leverhulme Research Fellow on the project Engineering Romanticism. He lectures on all periods of literature, however his research is mainly on C.18/19 literature and culture.

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[25] *Glasgow Mechanics' Institute Minute Book*, July 1823-May 1834 (University of Strathclyde Archives, Ref. GB 249 OC/1/1), np.

[26] See Farrar, p. 324, n. 70.